Original article

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Work–home interference and its prospective relation to major depression and treatment with antidepressants

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Objectives Few longitudinal studies have investigated if "work–home interference" (WHI), conflicts between work and home demands, predicts depressive disorders. We examined if WHI was prospectively associated with indicators of major depression in a nationally representative sample.

Methods We used multiple logistic and Cox regression models to examine if self-reported WHI was related to probable major depression [scoring high on a brief self-report scale based on the (Hopkins) Symptom Checklist] and/or any new antidepressant treatment using the prescribed drug register during a 2-year follow-up. The analytic sample comprised 1576 men and 1678 women, working respondents to the Swedish Longitudinal Occupational Survey of Health (SLOSH), free of major depression and prior purchases of antidepressants at baseline.

Results Altogether, 7% experienced high (very often/the whole time) and 32% moderate (sometimes) WHI. Overall, the analyses indicated prospective associations between especially high WHI and major depression and/or antidepressant treatment also when adjusting for work characteristics (demands, control, support, overtime). However, the estimates for major depression differed by sex. Separate analyses indicated that only women with high WHI were significantly more likely to have subsequent major depression. Analyses further indicated an elevated rate of antidepressant treatment for men in particular, partly explained by work characteristics and that major depression was related to subsequent high WHI.

Conclusions Based on a two-year follow-up, this study indicated that high WHI prospectively predicted major depression and/or antidepressant treatment, though effects appeared to differ to some extent by sex.

Key terms antidepressant treatment; cohort study; depressive disorder; epidemiology; major depressive disorder; prescription drug; prospective study; work–family conflict; work–life imbalance; work–private life interaction.

Major depressive disorders are common, particularly in Western society, have severe impact on functioning and quality of life, and generate substantial costs for individuals and society alike (1–3). Psychosocial work factors are implicated in their aetiology, and there is some support for a relation between psychosocial factors at the workplace (such as psychological demands and low social support as well as high demands in combination with low control, and high efforts in combination with low rewards) and subsequent depression (4–6). However, methodological limitations still hamper certain conclusions about causality (4). Moreover, when reviewing the literature on psychosocial factors in relation to risk of depressive disorders or symptoms, Bonde (4) found there is need for studies focusing on clinical depression for effective prevention. Others have also concluded there are few high-quality studies on work-related psychosocial factors in relation to depression examining measures other than those related to job demands, control, and social support (5). Furthermore self-reports on both exposure and outcome variables have often been a limitation in previous research (4, 5). More work is still needed to draw well-founded conclusions about causality. The use of objective and

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independent indicators of mental health disorders, such as antidepressant treatment from official registers, could provide valuable information for causal inference.

More evidence is, eg, required on the balance between demands from work and private life." "Work–family conflict" (WFC) can arise when "efforts to fulfill the demands of the employee role interfere with the ability to fulfill the demands of the roles as a spouse, parent, or carer" (7). Another similar term commonly used is "work–home interference" (WHI) (8) although this does not necessarily refer to impact on the role as a spouse, parent, or carer. A general trend is that the boundaries between work and non-work continue to change, and dual-earning families have become more prevalent (9). The Nordic countries have a tradition of relatively equal employment participation, but despite development of family-friendly policies, it has been reported that women in Sweden experience a higher degree of conflict between work and household demands than women in some other European countries (10). In a representative Swedish sample, as much as 25% of all men and 31% of all women reported WFC at some time during a week 2004 (11). A difference in prevalence between men and women has also been supported by more recent Swedish data, which also forms the basis for the present study, and this difference increased if the comparison was confined to those working full time (12). WHI has been indicated to have various negative health consequences. Particularly, WHI may impact on mental health (13), but the number of longitudinal studies on the health effects of WHI are still few (14, 15), which is also true for depressive disorders in particular (16).

The aim of this study was to examine if WHI was prospectively associated with major depression and/or antidepressant treatment among gainfully employed Swedish residents in the Swedish Longitudinal Occupational Survey of Health (SLOSH).

Methods

Study population

The study population were participants of SLOSH, which started in 2006 (wave 1) with a first follow-up of participants in the 2003 Swedish Work Environment Survey (SWES) (N=9214), which yielded 5985 (65%) respondents (17). A second, third, and fourth follow-up, including also participants of SWES 2005 (N=9703), were conducted in 2008 (11 441 respondents, 61% of those eligible), 2010 (10 078 respondents, 57% of eligible), and 2012 (9880 respondents, 57% of eligible), respectively. SWES consists of a biennial sample of gainfully employed people aged 16–64 years drawn from the Labour Force Survey. Thus, SLOSH is approximately representative of the Swedish working population in 2003–2005. SLOSH cohort members are asked to complete postal self-completion questionnaires, either a version addressed to "gainfully employed" (ie, those in gainful employment for ≥30% of full time) or one for "not gainfully employed" (ie, those working less or who have left the labor force permanently or temporarily). The Regional Research Ethics Board in Stockholm has approved SLOSH, and all participants gave informed consent. The present study is based on the 4052 participants who were working ≥30% in 2006 and who also participated in 2008. Compared to all all respondents in SWES (2003) and SLOSH (2006), these participants were more often female, in the 40–59 age range, and university educated.

Work–home interference

WHI was measured with one question: "Do the demands placed on you at work interfere with your home and family life?" The response options were 1=very rarely, 2=not very often, 3=sometimes, 4=very often, and 5=the whole time, categorized into: (i) low (very rarely or not very often), moderate (sometimes), and high (very often and the whole time) WHI.

Major depression and treatment with antidepressants

Depressive symptoms were measured with a brief subscale from the (Hopkins) Symptom Checklist (SCL-90) in both 2006 and 2008 (18). The six items were primarily selected based on clinical validity and thematically correspond to the 6-item Hamilton Depression Subscale ($HAM\text{-}D_6$) measuring symptoms of: feeling blue; feeling no interest in things; feeling lethargy or low in energy; worrying too much about things; blaming yourself for things; and feeling everything is an effort (19, 20). Each item measures one-week prevalence by asking: "How much during the past week has that problem troubled you?" and is quantified on a 5-category scale from 0=not at all to 4=extremely. A summated score of the above six items ranging from 0–24 was used for the analyses. The scale has been indicated as a valid and unidimensional scale suitable as a measure of depression severity as compared to other self-report depression scales (20, 21). A score of ≥17 has been found indicative of major depression when using the Major Depression Inventory as index of validity (21).

Data on purchased antidepressants were retrieved from the Swedish National Prescribed Drug Register from July 2005 until April 2009. This register contains information on all prescribed drugs dispensed from all pharmacies in Sweden since July 2005, excluding drugs sold over-the-counter or given in nursing homes and

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in-patient care (22). In order to identify new treatments within the two years following the 2006 SLOSH survey, all redeemed prescriptions coded N06a according to the Anatomical Therapeutic Chemical (ATC) system, including preparations used in the treatment of endogenous and exogenous depressions, were extracted with exact dates of purchase.

Statistical analysis

All analyses were restricted to participants with: (i) no major depression according to the baseline (2006) survey, (ii) no purchases of antidepressants within 263 days prior to responding to the survey, and (iii) full information on all the variables included in the regression models, in total 3224 individuals. To examine the prospective association between WHI and major depression, we used multiple logistic regression models. Results are presented as odds ratios (OR) with 95 % confidence intervals (95% CI). Using the same approach, we additionally analyzed if major depression predicted later high WHI while excluding people with previous high WHI. Cox proportional hazards regression models, which allow for the use of exact dates, were fitted to examine the association between WHI and treatment with antidepressants, yielding hazard ratios (HR) with 95% CI. Participants were followed until the first purchase of an antidepressant, death, or end of follow up [ie, 731 days (2 years) after the return of the 2006 questionnaire]. The proportional hazards assumption was tested visually by inspection of the log-log survival plots. Furthermore, we assessed the relationship between WHI and a classification indicating major depression and/or a new antidepressant treatment using multiple logistic regression models. Covariates considered included sex, age, yearly work income retrieved from Statistics Sweden for 2006, marital status (single, married, or cohabiting), presence of small (0–5 years of age) children at home (yes, no), education (compulsory, 2-year upper secondary/vocational training, 3- or 4-year upper secondary education, university or equivalent <3 years, university or equivalent ≥3 years), as well as if respondents were working full time (usually 37–40 hours per week) or part time from survey data supplied 2006. These covariates were chosen as they are recognized as risk factors for depression (4) and could be associated with WHI (23). Because there are some indications that health consequences can differ between men and women (12), we additionally included a multiplicative interaction term between WHI and sex in the regression models. As the interaction was significant, we present sex-stratified analyses. Furthermore, we examined how the results were influenced by work characteristics 2006: job demands, decision authority, and social support according to the Demand–Control model (24, 25) as well as overtime measured as frequency of sometimes having so much to do that one has to skip lunch, work late, or take work home, as those are potential antecedents of WHI (23) and related to depression (4). Demographic characteristics (model 1), socioeconomic indicators (model 2), and work characteristics (model 3) were introduced sequentially as covariates in order to delineate how these factors affected the effect estimates. Analyses were conducted in SAS 9.2 (SAS Institute, Cary, NC, USA)

Results

Among all participants in the analytic sample, 32% experienced moderate, 7% high, and 61% low WHI (table 1). WHI appeared to be slightly more common among women. Having small children was more frequent among male respondents while women tended to have lower yearly work income and were more often working part time. The proportion of people classified with major depression (2008) who had a new redeemed prescription of antidepressants during a two-year period is presented in table 2 by level of WHI (2006). Only 11 individuals were classified with major depression (2008) and had a new treatment of antidepressants during the period of interest.

Also in 2008, the proportion of people who had major depression according to SCL-90 was related to the degree of WHI: 2.1% among those with low, 2.6% moderate, and 10.8% high WHI. There was a weak and statistically insignificant cross-sectional association between moderate WHI and major depression in 2008 (OR 1.22, 95% CI 0.74–2.00) when adjusting for sex and age, while the corresponding estimate for high WHI was 5.44 (95% CI 3.29–8.98). We also found a prospective association between high WHI in 2006 and major depression in 2008 for men and women combined. The OR was 3.03 (95% CI 1.69–5.44) after adjustment for demographics (model 1 in table 3). This estimate was somewhat attenuated by additional adjustment for education, income, and full- or part-time work (model 2). Further adjustment for work characteristics including job demands, decision authority, social support, and overtime work did not change these estimates much, suggesting an association between high WHI and high depression scores independent of other work characteristics (OR 2.76, 95% CI 1.40–5.47). When testing for an interaction between WHI and sex, we found a significant difference between men and women regarding the effects of high WHI (P=0.04), while there was no significant difference with regard to moderate WHI (P=0.76). Sex-stratified analyses showed an excess risk associated with high WHI only among women, with an

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Table 1. Frequency distribution or mean and standard deviation (SD) of work–home interference (WHI) and covariates (2006) among people free of major depression and prior anti-depressant treatment, also subdivided by sex. [SD=standard deviation.]

	All				Men				Women			
	N	%	Mean	SD	N	%	Mean	SD	N	%	Mean	SD
WHI												
Low	1979	61.4			993	64.2			986	58.8		
Moderate	1018	31.6			450	29.1			568	33.9		
High	227	7.0			103	6.7			124	7.4		
Age (years)			47.9	10.7			48.1	10.7			47.8	10.6
Civil status												
Single	687	21.3			315	20.4			372	22.2		
Married/cohabiting	2537	78.7			1231	79.6			1306	77.8		
Small children at home												
No	2796	86.7			1311	84.8			1485	88.5		
Yes	428	13.3			235	15.2			193	11.5		
Yearly income from work (1000 SEK)			293	280			333	357			256	174
Full-/parttime work												
Full time (usually 37–40 hours/week)	2629	81.5			1448	93.7			1181	70.4		
Part time (<37–40 hours/week)	595	18.5			98	6.3			497	29.6		

Table 2. Number of people initially free of major depression and prior anti-depressant treatment experiencing low, moderate, or high work–home interference (WHI) (2006) and proportion that had developed "major depression" at follow-up (2008) and who had redeemed a new prescription of antidepressants during a two year period following the survey.

	Total number	Major depression		Antidepressants	
		N	%	N	%
WHI (all)					
Low	1979	48	2.4	52	2.6
Moderate	1018	32	3.1	40	3.9
High	227	16	7.1	11	4.9
WHI (men)					
Low	993	29	2.9	16	1.6
Moderate	450	12	2.7	11	2.4
High	103	3	2.9	5	4.9
WHI (women)					
Low	986	19	1.9	36	3.7
Moderate	568	20	3.5	29	5.1
High	124	13	10.5	6	4.8

OR of 6.02 (95% CI 2.89–12.5) in model 1 and 6.15 (95% CI 2.89–13.1) in model 2, while the corresponding estimates for men were 1.04 (95% CI 0.31–3.52) and 0.87 (95% CI 0.25–2.95), respectively. When examining the influence of work characteristics, these factors did not fully explain the findings for women. Although attenuated, the OR remained statistically significant (3.54, 95% CI 1.49–8.43).

When fitting a model assessing possible reverse causation, major depression at wave 1 was significantly related to high WHI at wave 2, while excluding those with high WHI at wave 1 and adjusting for the same covariates as in model 2 in table 3 (N=3062). We found an OR of 2.79 (95% CI 1.47–5.31) for men and women combined: 3.77 (95% CI 1.23–11.61) for men and 2.51 (95% CI 1.14–5.52) for women.

The result of the Cox regression by WHI category (2006) is presented in table 4. The results indicated that moderate and high WHI were associated with increased risk of antidepressant treatment (OR 1.58, 95% CI 1.04–2.40 and 2.10, 95% CI 1.09–4.07, respectively, in model 2). In contrast to the analysis with major depression as outcome, the effect on antidepressant treatment appeared somewhat stronger among men than women, although there was no statistically significant interaction with sex. The HR in model 2 for high WHI were 3.74 (95% CI 1.32–10.57) and 1.59 (95% CI 0.67–3.81) for men and women, respectively. The pattern was similar when work characteristics were introduced, though the HR were attenuated and no longer statistically significant.

Finally, analyses using a combination of self-reported data indicative of major depression and register data on antidepressant treatment as outcome variable supported a prospective effect of especially high WHI (table 5). As in the analyses only using self-reports, risk estimates were most elevated among women for whom high WHI was statistically significantly indicated to be related to incident major depression and/or antidepressant treatment. Addition of work characteristics attenuated the OR but did not improve the model fit for women.

Discussion

The results of this study indicate that WHI may be associated with a prospective risk for major depression and/or an increased risk of treatment with antidepressants in the Swedish working population. High WHI was

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Table 3. Results of the logistic regression analyses on the prospective association between degree of experienced work–home interference (WHI) in 2006 and major depression in 2008 among people free of major depression 2006 and prior antidepressant treatment. [OR=odds ratio; 95% CI=95% confidence interval]

	Model 1 [a]			Model 2 [b]			Model 3 [c]		
	OR	95 % CI	Model fit	OR	95 % CI	Model fit	OR	95 % CI	Model fit
WHI (all)			-2 LOG L 846 /AIC 860/ Hosmer-Lemeshow fit test X^2=9.3 P=0.32			-2 LOG L 838/AIC 864/ Hosmer-Lemeshow fit test X^2=4.4 P=0.81			-2 LOG L 837 /AIC 871/ Hosmer-Lemeshow fit test X^2=5.7 P=0.68
Low	1.00			1.00			1.00		
Moderate	1.30	0.82–2.05		1.23	0.78–1.95		1.25	0.76–2.04	
High	3.03	1.69–5.44		2.75	1.52–4.97		2.76	1.40–5.47	
WHI (men)			-2 LOG L 393 /AIC 405/ Hosmer-Lemeshow fit test X^2=11.5 P=0.18			-2 LOG L 385 /AIC 409/ Hosmer-Lemeshow fit test X^2=4.9 P=0.77			-2 LOG L 377/AIC 409/ Hosmer-Lemeshow fit test X^2=5.9 P=0.66
Low	1.00			1.00			1.00		
Moderate	0.93	0.47–1.85		0.79	0.39–1.59		1.03	0.49–2.17	
High	1.04	0.31–3.52		0.87	0.25–2.95		1.61	0.42–6.09	
WHI (women)			-2 LOG L 382/AIC 394/ Hosmer-Lemeshow fit test X^2=6.5 P=0.59			-2 LOG L 431/AIC 455/ Hosmer-Lemeshow fit test X^2=14.4 P=0.07			-2 LOG L 419/AIC 451/ Hosmer-Lemeshow fit test X^2=5.8 P=0.67
Low	1.00			1.00			1.00		
Moderate	1.84	0.97–3.48		1.83	0.96–3.49		1.29	0.64–2.59	
High	6.02	2.89–12.5		6.15	2.89–13.1		3.54	1.49–8.43	

[a] Adjusted for sex, age, marital status, small children 2006. Sex is only adjusted for when the analyses are not stratified by sex.
[b] Model 1 + adjusted for income from work, education, and full- versus part time work in 2006.
[c] Model 2 + adjusted for work demands, decision authority, social support and overtime.

Table 4. Results of the Cox proportional hazards regression analyses on the prospective association between degree of experienced work–home interference (WHI) in 2006 and a new treatment with antidepressants during the following 731 days. [HR=hazard ratio; 95% CI=95% confidence interval]

	Model 1 [a]			Model 2 [b]			Model 3 [c]		
	HR	95 % CI	Model fit	HR	95 % CI	Model fit	HR	95 % CI	Model fit
WHI (all)			-2 LOG L 1637/ AIC 1649			-2 LOG L 1622/ AIC 1646			-2 LOG L 1615/ AIC 1647
Low	1.00			1.00			1.00		
Moderate	1.51	1.00–2.28		1.58	1.04–2.40		1.36	0.87–2.14	
High	1.84	0.96–3.52		2.10	1.09–4.07		1.61	0.78–3.33	
WHI (men)			-2 LOG L 461/ AIC 471			-2 LOG L 454/ AIC 476			-2 LOG L 447/ AIC 477
Low	1.00			1.00			1.00		
Moderate	1.66	0.76–3.60		1.67	0.76–3.68		1.29	0.55–3.03	
High	3.41	1.24–9.39		3.74	1.32–10.57		2.43	0.73–8.05	
WHI (women)			2 LOG L 1044/ AIC 1054			2 LOG L 1023/ AIC 1045			2 LOG L 1019/ AIC 1049
Low	1.00			1.00			1.00		
Moderate	1.47	0.90–2.40		1.58	0.96–2.59		1.39	0.82–2.37	
High	1.31	0.55–3.11		1.59	0.67–3.81		1.28	0.50–3.25	

[a] Adjusted for sex, age, marital status, small children 2006. Sex is only adjusted for when the analyses are not stratified by sex.
[b] Model 1 + adjusted for income from work, education, and full- versus part time work in 2006.
[c] Model 2 + adjusted for work demands, decision authority, social support and overtime.

generally associated with increased risks, whereas there was a tendency towards increased risks associated with moderate WHI which could indicate a dose–response relationship. High WHI was, however, clearly associated with the major depression indicator among women only, while risk estimates for antidepressant treatment appeared somewhat stronger for men.

Prospective effects of WHI or WFC on depressive complaints (14) or dysphoric mood (26) have been reported in some smaller previous studies, while other studies have found no significant longitudinal effects of WFC on depression (27, 28) or psychological distress (29). Some of these studies had a long follow-up period (4–6 years), which could be a limitation if WHI is only associated with short-term risk of depressive symptoms. Rantanen et al (30) recently showed that prolonged WFC (increasing across midlife) can lead to reduced psychological well-being, whereas WFC confined to a certain time period in life was not associated with impaired well-being (30). The present study was a two-year prospective study with a focus on clinically relevant depressive symptoms. As far as we are aware, only one other longitudinal study, from a Canadian province (16), has used a similar outcome measure. That study showed similar results. Only women with WFC had an increased risk of one-year incidence of major depressive disorder (16). In comparison, our study was larger, with a longer follow-up, and was more representative

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Table 5. Results of the logistic regression analyses on the prospective association between degree of experienced work–home interference (WHI) in 2006 and either major depression according to questionnaire data from 2008 or a treatment with antidepressants during the following 731 days among people initially free of major depression and prior antidepressant treatment. [OR=odds ratio; 95% CI=95% confidence interval]

	Model 1 [a]			Model 2 [b]			Model 3 [c]		
	OR	95 % CI	Model fit	OR	95 % CI	Model fit	OR	95 % CI	Model fit
WHI (all)			2 LOG L 1404 / AIC 1418/ Hosmer-Lemeshow fit test X^2=11.7 P=0.17			2 LOG L 1401/ AIC 1427/ Hosmer-Lemeshow fit test X^2=9.5 P=0.30			2 LOG L 1399/AIC 1433/ / Hosmer-Lemeshow fit test X^2=7.3 P=0.50
Low	1.00			1.00			1.00		
Moderate	1.44	1.05–1.99		1.45	1.05–2.01		1.37	0.97–1.95	
High	2.34	1.46–3.75		2.35	1.45–3.81		2.12	1.24–3.63	
WHI (men)			2 LOG L 579 /AIC 591 / Hosmer-Lemeshow fit test X^2=14.8 P=0.06			2 LOG L 574/AIC 598/ Hosmer-Lemeshow fit test X^2=2.0 P=0.98			2 LOG L 567/AIC 599 / Hosmer-Lemeshow fit test X^2=4.3 P=0.83
Low	1.00			1.00			1.00		
Moderate	1.27	0.75–2.16		1.18	0.69–2.01		1.24	0.69–2.20	
High	2.05	0.93–4.54		1.88	0.84–4.22		2.36	0.95–5.84	
WHI (women)			2 LOG L 822/AIC 834 / Hosmer-Lemeshow fit test X^2=7.2 P=0.52			2 LOG L 810 /AIC 834 / Hosmer-Lemeshow fit test X^2=6.9 P=0.54			2 LOG L 801 /AIC 833 / Hosmer-Lemeshow fit test X^2=18.6 P=0.02
Low	1.00			1.00			1.00		
Moderate	1.58	1.05–2.39		1.65	1.09–2.51		1.36	0.86–2.13	
High	2.60	1.43–4.71		2.97	1.62–5.47		2.14	1.09–4.19	

[a] Adjusted for sex, age, marital status, small children 2006. Sex is only adjusted for when the analyses are not stratified by sex.
[b] Model 1 + adjusted for income from work, education, and full- versus part time work in 2006.
[c] Model 2 + adjusted for work demands, decision authority, social support and overtime.

of the general working population, although we did not use a diagnostic interview instrument. Our results give support to a prospective relationship between WHI and major depression among women. We have also previously found somewhat divergent patterns for men and women when prospectively examining three different health indicators or health-related behaviors such as self-rated health, emotional exhaustion, and problem drinking: WFC predicted suboptimal self-rated health among women, emotional exhaustion among both men and women, and problem drinking among men (12). Previous literature, however, shows mixed findings on effects among women and men (16, 29).

Conversely, no clear difference between men and women was observed when treatment with antidepressants was used as outcome in this study. If anything, the risk estimates were stronger among men. To our knowledge, this is the first study to show a prospective relationship with use of antidepressants. Others have, for example, shown a link between WFC and subsequent sleep medication among women (31). Cross-sectional Swedish data also showed an association between WHI and use of sleeping pills or tranquilizers among men working full time (32). Wang et al (33) has further observed a cross-sectional association between high WFC and substance use disorders which appeared stronger for men.

The results by Wang et al seem to support the hypothesis that WFC is more strongly related to outcomes among women than men. This may be explained by sex role socialization: women are often socialized to give higher priority to the home or family role while men tend to give priority to the breadwinner role (34). However, in the present study we found a link between WHI and antidepressant treatment among men before controlling for work characteristics. It should be kept in mind that antidepressants are sometimes prescribed for indications other than depressive disorders such as anxiety, pain, and sleeping problems (35–37), but could be an indicator of mental health problems, and that treatment-seeking behaviors may influence drug prescriptions. This may be a partial explanation of the effect observed among men on this indicator and not major depression. In a study of outpatients with non-psychotic major depressive disorder for example, men demonstrated greater psychomotor agitation while women, to a higher degree, reported symptoms of increased appetite and weight, interpersonal sensitivity, mood reactivity, and leaden paralysis (38). Men might also express symptoms differently, perhaps to a higher degree not aware or wanting to admit to feeling blue.

Taken together, we observed relatively clear indications of a link between high WHI and subsequent major depression among women and treatment with antidepressants among men. The findings were also strengthened by an apparent relationship between high WHI in particular and any of the indicators used. Work characteristics such as demands, decision authority, social support and working overtime seemed to explain only part of the relationships. The results still indicated a prospective effect of high WHI, but it is doubtful that estimates adjusted for these characteristics represent the best estimates of association as especially demands and overtime may be part of the problem of an imbalance between work and

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private life demands. WHI was measured with one question. It is unclear to what extent WHI is time-, strain-, or behavior-based (8). Our results are, on the other hand, generalizable to a broad range of occupations as they are based on an originally nearly nationally representative sample of the Swedish working population. It is, however, unclear how non-respondents to SLOSH would have scored on WHI and depressive symptoms. Dropout among those scoring high might underestimate any true effects. Concerning the outcome measures, a strength is that we focus on clinically relevant depressive problems. The assessment of major depression was not made by physiatrists or a diagnostic instrument. However, the cut-off point indicative of major depression for this self-report scale has been determined for application to epidemiological research (21). By using register data on antidepressants, we avoid self-report bias which may be a concern despite the repeated measurements two years apart. The Prescribed Drug Register has very good coverage (22). Not surprisingly we also found an association between major depression and later high WHI. Therefore, reverse causation (ie, that depressive disorders occurs before experience of WHI) and bidirectional relationships between the two phenomena are also plausible, but since WHI was not similarly measured in more recent follow-ups, more sophisticated analyses were precluded. Future studies could, therefore, benefit from using more than two measurements properly addressing longitudinal change to advance our understanding on these relationships.

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